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# (12) United States Patent

# Tu et al.

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# (54) DETERMINING EXIT FROM A VEHICLE

(71) Applicant: Apple Inc., Cupertino, CA (US)

(72) Inventors: Xiaoyuan Tu, Sunnyvale, CA (US);

Anil K. Kandangath, San Francisco,

CA (US)

(73) Assignee: Apple Inc., Cupertino, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this

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This patent is subject to a terminal dis-

claimer.

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## Related U.S. Application Data

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- (52) **U.S. CI.**CPC ............. *H04W 4/028* (2013.01); *H04W 4/046* (2013.01); *H04W 24/00* (2013.01)

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Primary Examiner — Mong-Thuy Tran (74) Attorney, Agent, or Firm — Kilpatrick Townsend & Stockton LLP

# (57) ABSTRACT

Methods and mobile devices determine an exit from a vehicle. Sensors of a mobile device can be used to determine when the user is in a vehicle that is driving. The same or different sensors can be used to identify a disturbance (e.g., loss of communication connection from mobile device to a car computer). After the disturbance, an exit confidence score can be determined at various times, and compared to a threshold. A determination of the exit of the user can be determined based on the comparison of the exit confidence score to the threshold. The mobile device can perform one or more functions in response to the exit confidence score exceeding the threshold, such as changing a user interface e.g., of a navigation app) or obtaining a location to designate a parking location.

# 18 Claims, 9 Drawing Sheets

Determining that the mobile device is in a driving state

220 Monitor the one or more sensors

Detecting a disturbance based on measurements from the one or more sensors

Determine a confidence score of whether the user has exted the vehicle in response to the disturbance

Compare the confidence score to a first threshold

Identify the user as exited from the vehicle in response to the confidence score exceeding the first threshold at a first time.

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